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ABSTRACT

In this document, the author examines the failure of teacher preparation institutes to produce effective graduates and presents suggestions designed to improve both the standard of education taught in these institutions and the quality of preservice and postgraduate students. Subsections are devoted to the futility of the theory vs. practice controversy, the inappropriateness of substituting inservice training for preservice education, the complexity of preparing for the teaching profession, the necessity for differentiating between those teacher competencies that should be demonstrated through selection and those that can be trained, the productiveness of preservice, undergraduate-level teacher selection, the need for delineating competencies that are generalizable rather than problem-specific, and evaluation methods for determining whether these competencies have been met. Ten assumptions that should be considered in the development of teacher education programs balancing theory and practice are listed, dealing with the questions of (1) self-selection, (2) the problem-solving approach, (3) the extent of undergraduate education depth, (4) the relationship of learning theory to instructional practice, (5) the complexity of the teacher education process, (6) teacher educator qualifications, (7) certification standards for a master's teacher certificate, (8) differentiated staffing patterns, (9) inservice training objectives, and (10) professional development for professional recognition. (MB)

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DOES PRACTICE MAKE PERFECT? TEACHER COMPETENCIES AND CONDITIONS WHICH CONTRIBUTE TO THEIR ACQUISITION

In my opinion teacher education is on the verge of bankruptcy. In Pennsylvania, the number of strikes and grievance cases continues to increase; taxpayers associations are multiplying, many with the express purpose to oppose the requests of the teaching profession. Citizen groups, some with governmental support, are suggesting alternative procedures for preparing teachers, which often result in a reduction in existing standards. The Coleman report gives the impression that teachers generally tend to be ineffective as evidenced by the fact that schools account for only a small percentage of the variance of students' academic performance. The standards for selecting teachers both at the school district level and teacher education level are declining in many places. Unfortunately, at a time when the potential for selecting effective, dynamic teachers has never been greater, the very factors which make the selection of effective teachers possible, in my opinion, now mitigate against it. With more teachers certified than available teaching positions, two events seem to be occurring. First, fewer people are applying for admission to teacher training institutions. The result is teacher educators are becoming less selective in whom they admit. We must "fill up" the classes to survive! Second, with a multitude of applicants for every teaching position, many districts give preferential treatment to "home town teachers" with secondary consideration to quality. In both cases, teacher selection decisions

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are based increasingly on personal and political expediency. In short, this lack of objectivity in selection, coupled with the surplus of "certified teachers," increases the probability that teacher educators and school districts are lowering their standards for teaching. The fact that A.T.E. membership is in trouble may be symptomatic of the pending bankruptcy of the profession.

What concerns me about these observations is that those who train teachers and professional teacher groups are increasingly tearing each other apart like hungry dogs fighting over a single morsel of meat as they seek to gain control of the "emasculated remains" of teacher education. While the "good of the child" is always the reason given for the position taken, I suspect that it is only a thinly veiled mask used to cover our personal concern for a shrinking job market and financial insecurity. If teachers and teacher trainers are not careful, they will re-enact the Western drama of two men lost in the desert, fighting over a single canteen of water which is spilled as they fight over it.

With all of my concerns for the difficulties in teacher education, there is one final observation I would like to share with you which causes me the greatest concern of all. That is, that we, as teachers and teacher educators, have a poorer self-concept than any other professional group I know, with the possible exception of the garbage collectors. How many public school teachers do you know who are overtly proud of their training in professional education? I have talked with dozens of teachers over the years, and the vast majority hold their professional training in contempt. Last week a supervisor of teachers made this comment to me: "Teacher education makes little difference,

at best it may give them from six months to a year head start over those who are not trained to teach."

This attitude of teachers is not an indictment of the loyalty of teachers to the profession or their ability to discern quality. Rather, it is, in my opinion, an honest admission that what they learn in professional education often has contributed little to their being able to demonstrate to their own satisfaction that their professional training set them apart in a clear, discernable way from those who have not received that training. If professional medical training did not provide conditions for the M.D.'s to succeed as practicioners in ways that they could not have succeeded without the medical training, and a little practice could bring them to their current level of proficiency, I would predict that their self-concept would be as low as that of teachers. Self-concept is dependent on success as perceived by the individual. Is it any wonder that the public is not willing to support us as professionals when the members of the profession have such a low self-concept and hold in contempt the very process which should give the profession a distinguishing quality? If the teaching profession is in difficulty, and I believe it is, it is in large part related to our ineptness in teacher training and the poor self-concept which we display publicly with respect to ourselves and our profession.

At the rate we are going, teacher education in the best sense of the word will soon be nonexistent. What is ironic about this is that there has never been a time when the quality of education for the learner and the quality of life for the educator in terms of teaching conditions and income has been potentially greater. We are spending

billions in national defense, health care, and care for the impoverished. The per capita expenditure on pleasure whether it be for vacations, booze, or automobiles has never been greater. The money is there--society simply does not like the quality of our product and neither do we.

If the financial resources are available so the teachers may both enjoy the good life and make available the good life to the students, why are we failing? While there is no simple solution for why we fail, I would suggest that our major problem is that we are probably spending too much of our time trying to change what is in the framework of existing assumptions we make about teacher education, rather than questioning the assumptions themselves. Specifically, we are still assuming that teachers are being prepared to make a difference both quantitatively and qualitatively using existing undergraduate education models of teacher education. Yet, the data tell us that either professional training contributes little to teacher effectiveness or that the models being used are ineffective. Our continued attempt to make old models work is not unlike the British troops in the French and Indian War--we continue to use simple variations of the same old recipes of strategies of war in spite of the fact that it is killing us.

Productive and Non-Productive Approaches to Teacher Education

The Theory Vs. Practice Controversy

One of the continuing discussions of how to improve teacher education, within existing models, is the theory vs. practice controversy. The legal and medical professions in the late 1800's set aside the notion that the primary approach to achieving the competencies necessary

for succeeding in the profession was through practice. Yet, many teachers and teacher organizations continue to suggest that theory contributes little to effective teaching and that "practical experience" is really what counts. The result is a movement in many areas back toward a "practice approach" to the preparation of teachers. Or at least the recommendation is being made that the practice approach become the dominant factor in teacher preparation. For example, in Pennsylvania beginning next year, it is required that all pre-service teachers have practical experience as early as the sophomore year. Yet, nothing is said about other educational experiences that may be equally or more important, or the competencies the early practical experiences are supposed to produce. This recommendation reflects the half truth that practice makes perfect. It is an established fact that practice can habituate imperfections as well as habituate desirable characteristics. What is insidious about this recommendation is that it implies that good practice is not based on good theory.

Like many naive conclusions in recommendations of this type, there are usually good reasons for it. In this case the reasons are probably related to the failure of our teacher preparation institutions to <u>teach</u> students theory or to teach students theory that is <u>appropriate</u> for the resolution of instructional problems they encounter in the classroom. Teacher educators often spend hours teaching learning theory, as we should, but <u>fail</u> to help the students to distinguish between learning and instructional theory. Further, we often fail to teach our students the relationship of learning theory to instruction. Or when we do, it is often the teaching of a single theory of learning, e.g., instrumental learning (behavioral modification) as a panacea for all instructional

problems. It is little wonder that teachers reject what they have been led to believe is instructional theory when they find it won't work in the classroom or only "works" occasionally.

Even worse, we often teach our teachers high sounding lists of techniques (we imply they are derived from theory) supposedly appropriate for students grouped on a given variable such as giftedness, slow learner, elementary education, social studies, and culturally disadvantaged. But after trying these techniques for a few weeks, the teachers usually find that they are of less use to them than the intuitive procedures they develop for themselves, out of their own experience. The difficulties with lists of techniques, or what I often refer to as the recipe approach to teaching, are two. First, the classification of individuals on a single variable, for purposes of instruction, no matter how relevant the classification variable, contributes little to explaining how to produce changes in the individual learner's behavior. Rather, a meaningful instructional strategy usually reflects the interaction of two or more variables. Second, techniques appropriate for one situation are rarely appropriate when the instructional conditions change.

In both of these illustrations the problem is the <u>failure to teach</u> theory which makes teachers more productive in the classroom rather than theory having little relevance for practice. Our problem is there is apparently too little theory being taught rather than too much. And the more basic problem may be that teacher trainers know too little relevant theory to teach, without realizing they do not.

The old theory vs. practice controversy also serves as a foundation for the ill-conceived recommendation that "cooperating teachers" should be given primary authority for supervising student teachers. The

implicit assumption is that the highly effective practitioner is most capable of helping the budding teacher define the nature of teaching in an applied setting. This recommendation is based on the erroneous assumption that because one can apply a concept, one can also necessarily bring to a conscious level the definition of that concept. It is a fact that for many of the concepts we know, as evidenced by our ability to apply them, we have great difficulty in bringing to a conscious level the definitions we use as a basis for application. While this poses no problem for the person who only expects to apply the concepts, it poses a tremendous problem for the person trying to teach the concept.

My mother is an excellent practicing psychologist as evidenced by her ability to control the behavior of others. Yet, she hardly qualifies as a teacher of psychology because she does not have the ability to define for others what psychological concepts she is applying. Her response, like many highly effective cooperating teachers, is "just apply common sense,"or she may give some rather specific examples of the kinds of things she thinks work rather than the conceptualization on which the examples are based. These are useless statements to the individual who is attempting to learn how to modify the behavior of others. Effective supervisors of teachers must have at a conscious level the definitions of the conceptualizations of teaching, not just the ability to apply them. Again the problem with our old practice vs. theory controversy is that our teacher trainers teach too little relevant theory rather than too much theory.

In all of this I am not suggesting that teachers should not have a sufficient range of experience in learning to apply the theories of instruction learned, if they are to be effective teachers, indeed they

must. Rather, I am stating that our continuing debate about whether we should have more practice or less practice is not likely to be a very productive one. Since theory is the basis for all good practice, and if the knowledge of theory and our ability to practice it is a distinguishing characteristic of the professional teacher, then we must cease the theory vs. practice debate and examine our programs to see why our theories of teaching are not more productive. If we continue the theory vs. practice debate as if they were competing the kinds of processes related to the preparation of teachers, we can only increase the rate at which we destroy the profession itself. Teacher trainers and teachers must demand that our teacher training program provide a better theoretical training as a prerequisite for defining the nature and amount of practice.

In-Service Training: A Satisfactory Substitute for Pre-Service Training?

In my opinion, the respective roles of in-service and pre-service training have not been clearly specified. The increasing emphasis on in-service training, for all it's potential, has contributed little to the improvement of the effectiveness of teaching. In-service training, as being suggested by some, may, if substituted for pre-service training, have detrimental effects. Again, unfortunately, it seems to be that the approach we use in teacher education in resolving our problems is to take half truths and argue very strongly for the particular portion of the truth as we see it. It seems to me that the procedure we ought to follow is to state under what conditions one particular approach is appropriate as opposed to another. In this case the question should be, "Under what conditions is in-service training more appropriate for increasing teacher effectiveness and under what conditions is pre-service training, whether it be at the undergraduate or graduate

level, most appropriate?"

A major objective of professional preparation where certification is a consideration is to assure society that all of the professionals who are licensed have demonstrated a common set of competencies at a satisfactory level. In-service training objectives usually assume that these competencies have already been demonstrated, and that the in-service training has as it's purpose the updating of the professional in a given area, or providing a competency to satisfy the need of the special situation. Clearly, both objectives are important but cannot be treated as being synonomous if both are to be achieved most effectively.

The appropriateness of an institution to be administratively responsible for in-service training depends on the segment of society which holds it accountable. Differences in sources of accountability for institutions and the effects of these sources on outcomes can be illustrated by the medical profession. For example, the quality of a practicing M.D., in terms of licensing, cannot be left in the hands of the local hospital, because the cost or the political needs of a given situation may compromise standards. Similarly, neither can the quality of a teacher be left in the hands of a school district where the needs of a given situation may compromise the standards regarding professional licensing. By way of contrast, institutions of higher education like medical schools are not subject to the pressures of local needs of school districts because their accountability source is not "as local." Thus, higher education has a greater potential for providing educational programs which have as a primary objective,

the meeting of professional licensing standards, because they are less subject to pressures which would compromise these standards. Conversely because the school districts or local hospitals are more capable of providing effective in-service training relevant to specific needs of a given situation, they can satisfy the objectives of in-service training at a much higher level than can a university. Therefore, I would conclude that all professional preparation leading to certification must be completed at a university level and all in-service training should be under the administrative responsibility of public schools. If the quality of teacher education is to be improved, we cannot continue to place in competition the concepts of in-service and pre-service training.

The Underestimation of the Complexity in Preparing Teachers

The complexity of programs for preparing professional educators, whose abilities are easily discernable by members of society, have been greatly underestimated by society and professional educators. Simply, if teachers can be prepared in 30 semester hours or less, then I suggest that the problems associated with modifying the learning behavior of children are relatively simple. Since the resolution of learning problems of children is obviously not simple, then it is highly improbable that teachers can acquire these competencies necessary for resolving complex learner problems in 30 semester hours of professional education. An examination of the types of learner problems teachers encounter in school indicates that the program and time requirements for the preparation of an effective teacher are probably more like the program requirements associated with the

preparation of a Ph.D. in psychology--that is, if we are serious about preparing effective teachers as opposed to simply preparing custodians. Allow me to elaborate. First, I am assuming that the effective teacher is a behavioral scientist, just as a psychologist is a behavioral scientist and his effectiveness can be increased by an effective preparation program. Second, I am suggesting that the teaching act is so enormously complex that the best undergraduate teacher education program is not sufficient to prepare the brightest undergraduates to be effective classroom teachers. One needs only to review what are considered realistic expectations in terms of demonstrated abilities of an A.B. in psychology to understand the unrealistic expectations of our undergraduate teacher education programs. Most of us would accept a satisfactory level of competence for the A.B. in psychology as being the ability to generate and test a set of theoretically based hypotheses under carefully controlled conditions, using infrahuman subjects, and provide a satisfactory explanation for his findings.

Our expectations for the teacher at the A.B. level are far greater than they are for the psychologist. And to that extent, I believe they are unrealistic. For example, by analogy to the teacher, our expectations of the A.B. in psychology might be to demonstrate not only the abilities already specified but to demonstrate the ability to generate and test hypotheses involving a pigeon (1) that is no longer in the carefully controlled environment of the Skinner Box but which is flying free in the environment--surely an unrealistic expectation for an A.B. in psychology; or (2) which is part of a whole flock of pigeons, each requiring its own behavior to be modified and, at the same time, each pigeon modifying the behavior of the others--surely an unrealistic expectation for the budding psychologist; or (3) in a

flock whose behavior can affect the behavior of the psychologist (where the psychologist must work as a part of that flock), not simply the psychologist controlling the behavior of the pigeons--surely learning to control his own behavior under these unusual conditions is too much to expect from the well trained A.B. in psychology. Yet, these implied abilities are the same abilities every effective teacher must be able to demonstrate in the classroom. One can only conclude that it is unrealistic to assume that these behaviors can be acquired even by our best teacher education students in our best undergraduate programs when they cannot be acquired by our best psychology majors in the best psychology departments. Again, simplistic recommendations regarding time in a program are easy to specify and defend if standards and performance are not specified and examined.

It follows that if effective teachers are to be prepared, undergraduate and post-graduate training, both in terms of time and expense, are more likely to be more analygous to medical education than to the soft, ineffective practices of the present, in that more rigorous standards associated with acceptable teacher behavior must be established and followed.

I can only conclude that if teachers are to demonstrate those abilities necessary for resolving complex learning problems, it is only reasonable to expect that a minimum of 2 years of graduate work in professional education will be necessary in addition to completing a high quality undergraduate teacher education program.

Teacher Competencies Which Lend Themselves to Training and those that must be Demonstrated through Selection

One of the major problems in teacher education is that we have failed to give careful consideration to those competencies which must be demonstrated primarily as a result of selection as opposed to those that lend themselves to training. While it is obvious that a perfect distinction cannot be made between those competencies which are likely to be improved through formal training than those which are not, some effort must be made to make this distinction in order to develop the most effective selection and educational procedures.

Competencies Dependent Primarily on Selection

Teacher Accountability

One of the necessary conditions for effective teaching is that teachers must assume responsibility for their teaching behavior. That is, if a child does not attain objectives which the teacher has deemed desirable, the teacher must assume that this failure of the child to learn is a function of his failure to teach. Unfortunately, too many teachers often place the responsibility of the child's failure to learn on the shoulders of the child or parent, while taking credit for themselves only if the child learns.

While stressing the importance of teacher accountability in the selection of teachers, it is not being suggested that the training and supervision will not contribute to the teacher's acting in a more accountable way in relation to his students. Rather, what is being suggested is that accountability, with respect to teaching, is in large part a professional attitude and thus difficult to change.

A Humane Attitude Toward Children and People in General

While there are many important characteristics of a teacher, most would agree that the most effective teachers have a personal concern for the general well being of each child as well as their academic success. While it is obvious that a humane attitude is not a sufficient condition for effective teaching, it is a necessary one. Again, because it is an attitude and thus difficult to change, care must be given in selecting teachers or prespective teachers to assure its presence.

Avoiding Teacher "Outdating" through Selection

The question must be raised if teachers are prepared at a level where they are capable of making a difference in learner performance, what is the best procedure for maintaining and increasing the level of acquired teacher competency? While the periodic renewal of licensing, through in-service training, is becoming a popular assumption, I have serious reservations about it. My opposition is based on the notion that our "outdating problem" is mainly a problem of teacher selection. Simply, our selection procedure often fails to discriminate between teachers who work to "achieve success" and those who work to "avoid failure." It is my belief that teachers who would complete in-serivce training programs primarily to "avoid failure" of having their license renewed are not likely to be very effective teachers at any time and are likely to profit little from in-service training. Conversely, teachers who work to "achieve success" are not likely to require in-service training to maintain or increase their teaching effectiveness. For this reason, it is probable that greater emphasis should be placed on selection than on in-service training as a means of maintaining the level of competency eventually acquired by the teacher.

Teacher accountability, humane attitudes toward children, and teachers who work to achieve success represent only three of a number of characteristics that are primarily dependent on selection. I have described them here briefly only to demonstrate the importance of selection criteria.

Is Teacher Selection at the Pre-Service Undergraduate Level Productive?

One of the erroneous assumptions implicit in our existing teacher education programs, is that teacher selection, in terms of the type of variables I have illustrated, is possible in a meaningful way at the undergraduate level. The difficulty in specifying valid predictors for effective teacher behaviors is well known. Further, because of political reasons, particularly in a shrinking student population, selection standards are probably being lowered. Many of our problems in providing effective teachers probably relate to certifying teachers who have had an opportunity to "pick up" a teaching license along with their real interest, e.g., mathematics or history.

Because of the importance of selection in producing effective teachers, it is important that the profession consider ways by which it can improve the selection process. One way would be to use a self selection procedure which requires a substantial commitment in terms of both time and resources to acquire pre-service education on the part of the aspiring professional. In a recent discussion, the dean of a law school made the following comment to me which emphasized the importance of self selection. He said, "I suspect that one of the reasons we are successful as a law school is that we require a substantial commitment of time from a person's life to complete the

law program, and at the same time we make it difficult for him to be admitted. It is probable that these factors contribute as much to the future success of our students as professionals as does the actual legal training they receive while they are here."

Education would do well in following the example of law and medicine and establish graduate teacher colleges which require a comprehensive undergraduate education background as well as two or more years of full time graduate study as a basis for certification. At a time when there are more people wanting to teach than there are positions, the opportunity is ripe for using a self selection procedure through graduate training as a means for increasing the quality of our teachers.

Competencies Which Tend to be Responsive to Training

Assuming effective selection criteria have been applied with respect to competencies associated with attitudes and values of teachers, the question must be raised concerning those competencies which lend themselves to training. It may be productive to classify these competencies into two categories. The first being competencies in the areas of the disciplines being taught such as language arts and mathematics, and the second being competencies associated with bringing about the desired changes in learner behavior (process competencies). In order to minimize the need of further education in these areas, care should be exercised to select those prospective teachers who demonstrate these competencies at the highest level. Where deficiencies are observed, additional training must be provided.

Discipline to be Taught

There is a reasonable amount of evidence to indicate that most teachers who graduate from a four-year approved institution of higher education are competent in the major discipline they expect to teach. For example, most mathematics teachers complete up to 40 undergraduate hours of mathematics while in college. Certainly this is a greater knowledge of mathematics than needed for teaching the most sophisticated elementary or secondary school students.

The Instructional Process Area

The need to specify teacher competencies as a basis for teacher education programs has led to the development of a number of lists of competencies. Rosenshine (1974), in his listing of nine variables thought to reflect teacher competency, indicates that these competencies are promising areas of research, but he states: "They cannot be used as checkpoints to assess teacher competency because the research to date is too incomplete." (p. 139) The problem of absence of research data to support the validity of specified teacher competencies is not unique to Rosenshine. A possible reason why the research findings related to teacher competencies are often incomplete is that the competencies listed may not be appropriate for all teaching situations. Thus, comparisions of the effectiveness of teachers, where the comparisons are based on teachers demonstrating a particular competency, may lead to equivocal results if the instructional conditions including the problem, should differ. In order to reduce the probability of equivocal research findings, an attempt must be made to identify competencies which are generalizable to most instructional conditions including differences in learner problems.

One possible approach to specifying competencies, which have a high degree of generalizability, is a problem solving approach. A problem solving approach, according to Dewey (1933) requires defining the problem, observing and collecting data, formulating a hypothesis, testing the hypothesis and drawing and applying a conclusion. Because identifying the problem, observing and collecting data and generating and testing hypotheses are not peculiar, in terms of their applicability, to a given learning situation, a problem solving approach would appear to be generalizable to most instructional situations.

In training teachers to use a problem solving approach, feedback must be provided in such a way as to maximize the probability that teachers can evaluate their effectiveness in terms of their utilization of the various elements of the approach, e.g., teachers, acquiring a problem solving approach, should be given feedback which will allow them to determine whether their inability to use a problem solving approach effectively is a function of (a) their failure to use feedback, (b) their inability to generate total hypotheses, (c) their inability to make valid observations, or (d) their inability to relate knowledge to explanation.

While problem solving competencies are thought to be necessary conditions for effective teaching, they may not be sufficient. Specifically, there may be situations where a teacher may develop the ability to utilize a problem solving approach in case study type situations, but may not in a live classroom setting. One explanation for this observation may be that special consideration has not been given to factors which limit the teacher's ability to make valid

observations. For example, Good and Brophy (1973) refer to "teacher awareness," i.e., the teacher's consciousness of what he does in the classroom, and Moore, et al (1974), alluding to the same concept, discuss the importance of "control of one's teaching behavior." Teacher "awareness" or "control" is thought to be important because it probably establishes the upper limit of one's ability to observe as a basis for hypothesis generation and testing. Specifically, a teacher who simply responds reflexively to a learner behavior, as opposed to a teacher who does not simply respond reflexively but deliberately processes the observation, is not likely to be able to generate hypotheses appropriate for modifying the learner's behavior based on the observation.

Additional evidence from studies conducted by Borg, et al (1970), Emmer (1967), Brophy and Good (1970) and others, indicates that teachers are often unaware of or misinterpret their own teaching behavior. Thus, if teachers are to develop the ability to observe as a basis for hypothesis generation and testing, conditions must be provided to enable teachers to acquire "awareness" or "control" of these teaching behaviors.

In short, if teacher education is to be effective, then it is important that teacher training make new assumptions about the nature of the competencies required of teachers. Namely, that teachers must be able to apply a theoretically based problem solving approach to teaching which is comparable in complexity to that of a well trained clinical psychologist.

What Evidence Can Be Used to Evaluate Whether Teachers Have Acquired These Competencies?

Controlling One's Teaching Behavior

One measure we have used at Bucknell is to observe the discrepancy between what a teacher thinks he is doing and what he in fact does. The lower the discrepancies, the greater the control. The procedure followed is simply to record the number of teacher initiated interventions with students during a fixed period of time and compare it to the teacher's rating of need of each of the students following the observation.

Competencies Associated with the Generation and Testing of Hypotheses (A Problem Solving Approach)

This competency can be evaluated on two levels. First, the ability of the teacher to apply the process and second, learner performance. Learner performance can be measured both in terms of learner attention and in their achievement of the educational objective following the diagnostic effort of the teacher. In the first case, when a learner who is having a problem, either a problem of attention or satisfying an educational objective, the teacher behavior is recorded in response to each instance of the learner behavior. If the teacher behavior is observed not to change, it may be concluded they are not processing feedback. If it is observed to change, it can be concluded that the teacher is using feedback but he may be changing his behavior only in a trial and error fashion. Additional data may be gained concerning the basis for the teacher changing his behavior by asking the teacher to explain the observed change in his behavior. If he gives an explanation based on the knowledge of constructs of human behavior or learning theory as applied to the problems of learner attention or

instructional sequencing, whichever the case may be, it may be concluded that he is functioning on a theoretical level as opposed to a trial and error approach. If the teacher is observed to consistently provide a theoretically based explanation, but fails to resolve many learner problems, it is possible to conclude that the teacher may either not know the relationship of knowledge to theory generation or his knowledge of human behavior as it relates to instructional theory is too limited. Without elaborating further, it is possible to observe the effectiveness of the teacher in terms of the process used and at the same time to provide feedback to the teacher as a means of improving their teaching effectiveness.

The Appropriateness of a Problem Solving Approach to Teacher Preparation for all Levels of Teaching.

The appropriateness of a problem solving approach to teacher preparation for all levels of teaching and subject area has been demonstrated in a series of controlled experiments completed at Bucknell with in-service teachers and was reported at the 1975 A.T.E. annual convention. In that research it was reported that the training procedures used were effective in producing significant changes in the teachers' ability to control their teaching behavior and to generate and test hypotheses with respect to both learner attention and learner performance. Additionally, data were also collected which indicated that these behaviors, once acquired, were retained by the teachers over a long period of time.

What Assumptions Should Be Considered If We Are to Develop Teacher Education Programs which Place into Perspective Theory and Practice and Encourage Positive Teacher Attitudes and Effectiveness?

Based on the observations described above, I would suggest the following: (1) The present values associated with teacher accountability

and commitment can be best assured by self selection where a substantial personal sacrifice, in terms of time and money is required for post-baccalaureate education. (2) That a problem solving approach to teacher education be used to prepare all teachers for all areas of specialization. (3) That undergraduate teacher education be limited to the teaching of those competencies which can be realistically acquired at the undergraduate level. (4) That in the acquisition of a problem solving approach, students be taught the relationship of learning theory to instructional practice. (5) That we recognize the complexity of preparing teachers and that we establish a competency based graduate program of teacher education as a means for increasing the quality of teachers through (a) self selection and (b) providing teachers with an in-depth knowledge of human behavior and the ability to apply a problem solving approach to instruction. (6) That all educational experiences of teachers both at the pre- and post-baccalaureate level, including practicum experiences, be taught by teachers who have an in-depth knowledge of the theoretical aspects of teaching as well as demonstrated ability to apply it. (7) That new certification standards be developed, e.g., a master's teacher certificate with an appropriate salary scale to recognize and reward teachers who demonstrate the problem solving competencies. (8) That differentiated staffing patterns be established in schools to make feasible the utilization of abilities of a master teacher. (9) That in-service training be restricted to those objectives considered to be important to a district or to particular interest of an individual teacher. (10) That teacher educators and teacher practitioners get down to the business of defining teaching in a way that will make it clearly distinguishable

as a sophisticated profession on the part of both teachers and the society which we serve. We must develop a cooperative effort with clearly defined ends, as opposed to treating education as a political football where both groups tend to loose.